

SYSTEMS THINKING: A FOUNDATIONAL ART FOR STRATEGIC LEADERS

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USAWC CLASS OF 2011

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USAWC STRATEGY RESEARCH PROJECT

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by

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ABSTRACT

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The chaos and interconnected messes of the contemporary operating environment has increased the fog and friction in which strategic leaders must think and devise strategies. Today's ever increasing wicked problems have resulted in a search, by strategic leaders, for the ideal thinking model to organize, frame and ensure relevancy of thought to meet the envisioned ends. A recent model, proposed as a means of thinking and adopted by the United States Army War College frames and assists strategic leaders in applying thinking skills. It fails, however, to identify systems thinking as a foundational strategic leader conceptual competency, which would provide the required framework in order to make decisions in the future. A new model has been proposed that specifically addresses this shortfall. It provides clarity of thinking to strategic leaders and is already evident in two ways of decision making; Soft Systems Methodology and the US Army's Design. The result is a holistic understanding of the volatile, uncertain, complex and ambiguous environment which facilitates quality strategic leadership thinking when devising strategies and that (can/will) benefit the entire organization.

SYSTEMS THINKING: A FOUNDATIONAL ART FOR STRATEGIC LEADERS

The tools and ideas presented in this [paper] are for destroying the illusion that the world is created of separated, unrelated forces. When we give up this illusion – we can then build “learning organizations.

—Peter Senge¹

Simply wicked is an uncomplicated way to describe the Current Operating Environment (COE).² Yet for strategic leaders the COE is anything but uncomplicated; it is volatile, uncertain, complex and ambiguous (VUCA)³. Strategic leaders are faced with intractable problems that have no straightforward solutions.⁴ These problems are composed of interrelated dilemmas with multiple levels of associated factors in society, economy and governance.⁵ Furthermore, these social messes are more than problems; they are ambiguous, uncertain, illogical and are interconnected (systems of systems) depending on a given point of view.⁶ Social messes exhibit the *friction* of people interacting with evolving technology on a global scale that has increased the *fog* in which strategic leaders must think and devise strategies, represented in Figure 1.⁷

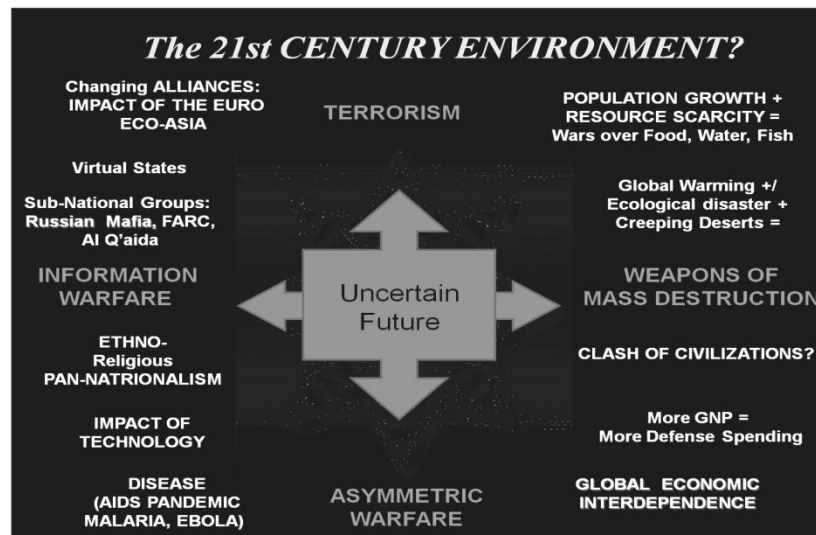


Figure 1: The COE for Strategic Leaders⁸

Today, “too many people rush to solutions, and as a result they end up solving the wrong problem.”⁹ In this tough time where organizational and social systems may reach tipping points of extreme challenge, leaders need to embrace new opportunities and skills, all of which will be amplified by connectivity, in order to cut through the chaos.¹⁰ Furthermore, the future COE will continue being complex, as stated in Joint Force Command’s 2010 Joint Operating Environment (JOE):

...trends and trajectories of the future will be non-linear... and might enhance or erode the power of a specific state or the overall state system of relations relative to non-state actors, and/or contribute to the emergence or suppression of global networks or ideologies that transcend the international system.¹¹

These systems will be loaded with contradictions and messes and will naturally lead to confusion.¹² Thus, it makes a clearer, stronger point to not use this word at all, or to use it, instead as : “ Leaders will, thus, have to continue.....”), leaders will have to continue to utilize furnished “intellectual [thinking] tools that bolster leaders against stress, friction, and fog.”¹³ They will have to combine the wisdom of the past with a vision for the future in order to navigate strategic problems and see the opportunities hidden within.¹⁴

This paper concentrates on systems thinking as a foundational art in strategic thinking. It proposes that systems thinking is a practice of thinking that allows strategic leaders to holistically appreciate and interpret the chaos and complexity of a given environment by recognizing the cause and effect relationships of its respective actors. Furthermore, the paper suggests systems thinking should be incorporated into strategic integrative thinking skills as a key element to understanding the COE. This paper defines the chaotic nature of the COE that the strategic thinker must overcome in order

to meet the ends. It proposes that the current means, strategic thinking frameworks, do not incorporate systems thinking as a foundational competency and proposes a new holistic framework. Lastly, it suggests that systems thinking is already incorporated as a foundational competency in the ways, decision making frameworks, of Soft Systems Methodology (SSM) and the Army's methodology of campaign design.

The Theory

Strategic leaders face a COE that is “always in a greater or lesser state of dynamic instability or chaos.”¹⁵ To deal with problems in the COE, strategists think conceptually and pragmatically with the assistance of chaos and complex systems theory. Chaos theory is defined as the study of non-linear dynamics. Complex systems theory is the study of complex adaptive systems whose parts can evolve and adapt to a changing environment. Both offer a perspective about the COE that consists of “conditions, relationships, trends, issues, threats, opportunities, interactions, and effects that influence the success of the state in the relation to the physical world, other states and actors, chance and the possible futures.”¹⁶ This is opposed to a direct and simplistic cause and effect linear model which the great Prussian military theorist General Carl von Clausewitz recognized when he spoke about war being an inherently complex, non linear occurrence:

War is not an exercise of the will directed at inanimate matter, as is the case with the mechanical arts, or at matter which animate but passive and yielding, as is the case with the human mind and emotions in the fine arts. In war, the will is directed at an animate object that reacts. We therefore conclude that war does not belong in the realm of arts and sciences; rather it is part of man's social existence.¹⁷

Thus, the social nature of human activity surrounding the conduct of war can rarely be solved, instead it must be understood.¹⁸ So, today in order to account for the complex

and chaotic nature of the COE, strategists seek a holistic strategy that will enable them to intuitively and analytically understand the various elements and the actors that exist in “multicausal situations, unintended consequences, circumstances ripe for change, the roles of feedback and self-fulfilling expectations and other abnormalities.”¹⁹ This search for a strategy that will provide an understanding of the COE is ever more important as the majority of problems today have transformed from tame to wicked problems.

The Ends

The friction and fog of today’s COE has resulted in tame problems becoming wicked problems which cannot automatically be solved. The original theory of tame and wicked problems was authored by Jeff Conklin in his book *Dialogue Mapping: Building Understanding of Wicked Problems* which centered on a new way to create shared understanding. He stated tame problems are well defined with a definite end state. Further, the solutions to tame problems could be objectively tried and abandoned as it had a limited set of alternative solutions.²⁰ Conversely, wicked problems are unique problems that are characterized as a symptom of another problem that has no definitive formation or stopping rule.²¹ Examples of wicked problems are global climate change, international drug trafficking, homeland security, and terrorism.²² Thus, in order to solve a wicked problem a shared understanding and commitment to the problem and possible solutions must be created.²³ Likewise, strategic leaders can achieve solutions and coherence with the utilization of a common language of tools, methods and practices – holistic strategy.²⁴ It is these strategies that are defined as “the art of distributing and applying military force, or the threat of such action, to fulfill the ends of policy,” which require leaders to possess creative, instinctive and flexible competencies to deal with the messes of the strategic world.²⁵

As defined by the United States Army War College (USAWC), strategic leader competencies are “the knowledge, skills, attributes and capacities that enable a leader to perform his required tasks,” and are grouped into three categories: conceptual, technical and interpersonal.²⁶ These competencies are similar to those needed by any leader at any level; however, the necessity to understand and make decisions in the VUCA COE requires strategic leaders to have integrative conceptual thinking skills.²⁷ Additionally, as the army is a learning organization²⁸, strategic leaders need to continually expand their capacity to create the results they truly desire, nurture new and expansive patterns of thinking, collectively aspire, and build a culture where people are continually learning to see the fragments altogether.²⁹ The “cornerstone of a learning organization,”³⁰ is systems thinking, which is a “conceptual framework”³¹ that allows strategic leaders to “comprehend and address the whole, and to examine the interrelationship between the parts.”³² The end result will be a practicable conclusion which can either be the solution to the mess or in most cases, a military commander’s vision which facilitates understanding of what must be achieved. Nevertheless, in order to reach these ends and assist strategic leaders in reducing the fog and friction, means have been devised to holistically frame wicked problems of the COE.

The Means

Strategic thinking frameworks provide a shell in which to assist strategic leaders in formulating holistic strategies. Previous frameworks have concentrated on what the vicar of strategic management (and planning), Igor Ansoff, believed were analytical processes (science), or Henry Mintzberg’s view, that strategic thinking relies more on creativity and intuition (art).³³ Today, strategists have to put “intuition and analysis in all modes of thought,” which results in intelligent memory. Intelligent memory “is like

connecting the dots to form a picture.³⁴ The dots are pieces or ideas, the lines between them are your connections or associations,”³⁵ systems thinking. Yet, despite acknowledging the importance of systems thinking the current USAWC strategic thinking framework does not promote systems thinking as a foundational competency.

Many senior United States (US) institutional leaders and academics have said there is a need to develop better thinking skills for the COE.³⁶ The USAWC approach removes the severe delineation between art and science and postulates that “strategic thinking requires both critical and creative thinking in order to be effective.”³⁷ At the strategic level leaders are focused on how to posture their organizations or nations to succeed in the future.³⁸ As such, they are conducting strategic thinking, which is defined by two United States Army War College (USAWC) faculty members as:

...the ability to make a creative and holistic synthesis of key factors affecting an organization and its environment in order to obtain sustainable competitive advantage and long-term success. Strategic thinking meshes anticipated requirements with future organizational capabilities to ensure the organization “wins” in the future.³⁹

As one of the six core courses at the USAWC, Strategic Thinking forms one of the competencies and skills necessary for strategic leaders to navigate the VUCA strategic environment.⁴⁰ Recently a USAWC faculty member proposed a Strategic Thinking Framework which “delineated specific thinking skills...necessary for good strategic thinking and highlight[ed] the importance of synthesis and holistic appreciation of key factors that influence an organization and its environment,” represented in Figure 2.⁴¹ In addition, the author of the USAWC framework states that although “both [creative and critical thinking] are indeed important...the ability to use systems thinking to holistically assess all aspects of an organization’s internal and external key factors are what truly

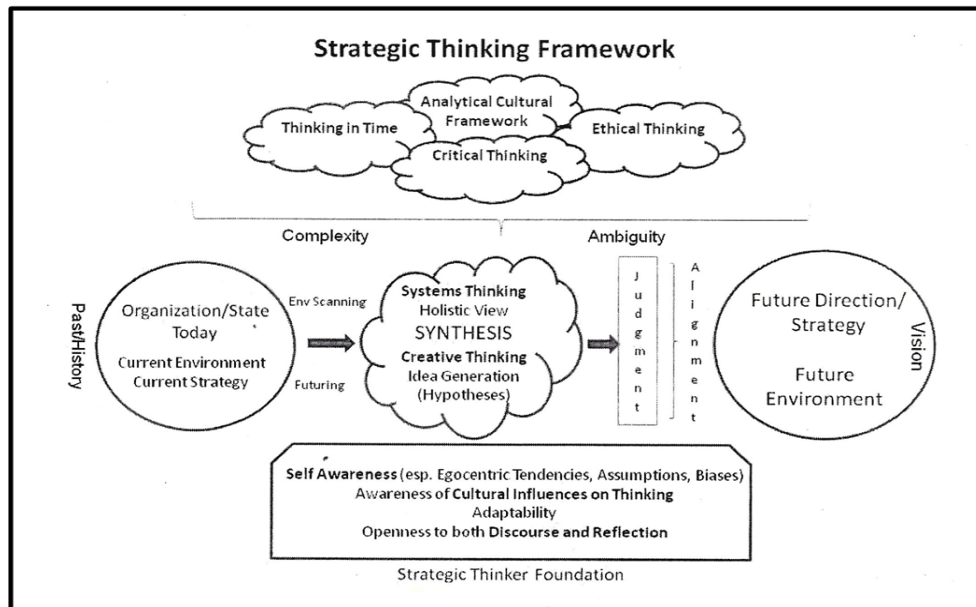


Figure 2: USAWC Strategic Thinking Framework⁴²

distinguish good strategic thinking.”⁴³ This holistic view which synthesizes thinking skills and identifies “key factors that influence the organization and its environment” is supported by leading American management expert, Russell Ackoff.⁴⁴ He believes that systems thinking is a fundamentally different means of viewing the world:

Analysis looks into things; synthesis looks out of things. Machine-Age thinking was concerned only with the interaction of the parts of the thing to be explained; systems thinking is similarly concerned, but it is additionally occupied with the interactions of that thing with other things in its environment and with its environment itself.⁴⁵

With that being said, it is proposed that the depiction of systems thinking in the USAWC framework is incorrect and that the overlapping clouds, which are the stated required skills for a sound strategic thinker should include systems thinking.⁴⁶ Moreover, systems thinking needs to be depicted as foundational competency within strategic thinking as proposed in following strategic thinking framework.

The Holistic Strategic Thinking Framework (HSTF) that incorporates systems thinking as a foundational concept is represented in Figure 3. As shown, systems

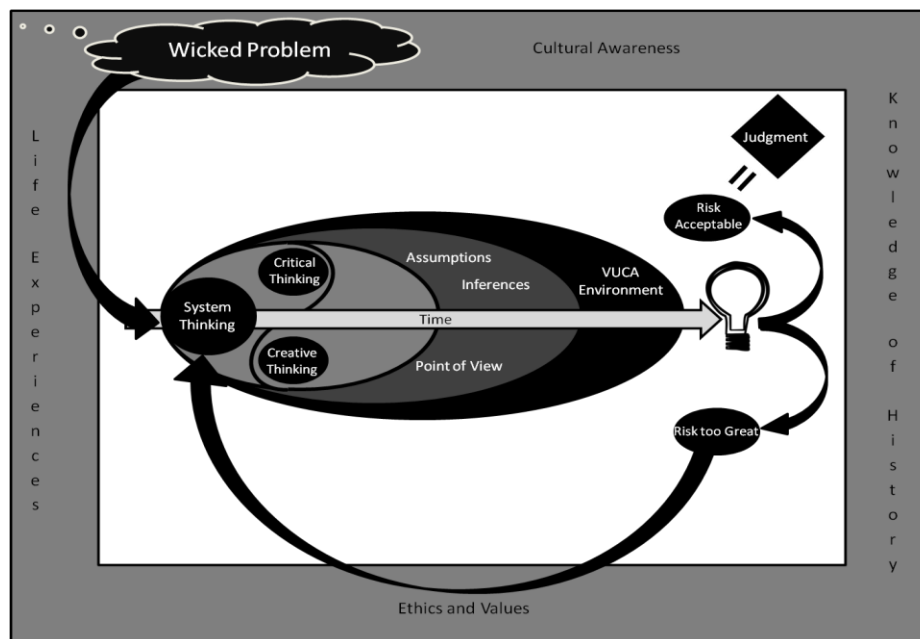


Figure 3: Holistic Strategic Thinking Framework (HSTF)

thinking is the foundational part of strategic thinking and complementary to other thinking skills when conceptually assessing the chaos and complexity of messes in the COE. Systems thinking, within this model, provides an opportunity to ‘find out about the operational environment,’ which will be further emphasized later in this paper during the presentation of Campaign Design. Nevertheless, as with the USAWC Strategic Thinking Framework, the HSTF depicts the key factors that truly distinguish good strategic thinking. However, these factors are placed within a framework that corresponds with an individual strategic thinker. Each strategic thinker approaches a wicked problem with his own knowledge of history, culture, life experiences and ethics and values. Thus, the breadth and depth of the framework is different with each thinker. With the basis of these four key attributes a strategic thinker places the wicked problem within the VUCA

environment that is affected by time. The length of time the strategic thinker has is commensurate to the size of the oval. Other factors that affect the strategic thinker are assumptions, inferences, and points of view. Combined, they all affect the inner oval in which are nested the three critical attributes for a strategic thinker. Although it can be argued that critical thinking is the most important, it is proposed that systems thinking is a foundational attribute and the enabler to facilitating good critical thinking.⁴⁷ The Paul and Elder critical thinking model, as represented in Figure 4, clearly highlights the

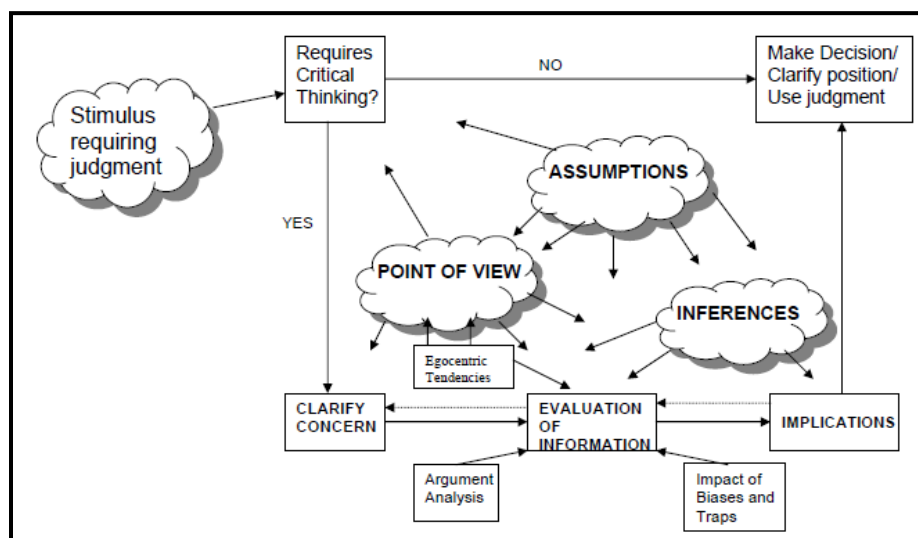


Figure 4: Critical Thinking Model⁴⁸

requirement for systems thinking in ‘clarify the concern.’ Within ‘clarify the concern’ a thinker considers all the complexities, and identifies root causes or unaddressed sub-components to ensure the problem is not framed in a manner that limits response options.⁴⁹ Therefore, as depicted in the HSTF, a strategic leader approaches a wicked problem by first utilizing system thinking and then applying the ‘*yin and yang*’ of critical and creative thinking to understand the environment. As with all levels of thinking, but most importantly strategic thinking, an imperative step in looking at wicked problems is

assessment. This “assessment is the continuous monitoring and evaluation of the current situation and progress...towards mission accomplishment [vision]”.⁵⁰ This assessment results in two outputs that can be associated with statements that are similar to Operational Art and Operational Design in Joint Publication JP 5-0:⁵¹

- The current vision is adequate, no change or minor change- the current vision remains risk acceptable.
- The current vision is sound but the risk is too great
- The current vision is no longer valid thus the risk is too great

If the risk is too great, the thinker must reenter the environment through the framework (as the four attributes may have been altered over time) and relook at the system to validate the environment or establish which actors or tendencies can be changed to facilitate a new vision that is risk acceptable. Nevertheless, as with SSM, described later, systems thinking within the HSTF circle requires that a strategic thinker finds out about the situation incorporating three analyses: identifying all the relevant actors; examining important norms, values, beliefs and attitudes of the actors in the messy situation; and determining the relationships or power structures that are operative in the situation.⁵² The result of the three analyses is a structured map of the environment of a complex system which facilitates the ways in which strategic leaders solve problems.

The Ways

In 1949, Ludwig von Bertalanffy, an Austrian born biologist, published the first general systems theory under the German title "Zu einer allgemeinen Systemlehre [To

General System Teachings]."⁵³ In 1950 Bertalanffy published "An Outline of General Systems Theory," as a result of noticing that:

...in physics, biology, psychology and social sciences no longer was acceptable to explain phenomena by reducing them to an interplay of elementary units which could be investigated independently.⁵⁴

According to Dr. Russ Ackoff, it was at this time (post World War II), that we entered a critical stage of cultural change called the 'change of age.' The change of age was the first since the Renaissance and involves many contributory changes but most importantly changes in our way of thinking which was recognized by Einstein.⁵⁵ Over the past 60 years, other work has been developed on systems theory. First, in the post Second World War era and into the 1960s military organizations like Bell Telephone formalized 'systems engineering' and the RAND Corporation developed 'system analysis' as organized forms of problem solving and decisions making.⁵⁶ These were known as 'hard systems thinking' which was:

...to define very carefully a desirable objective or need, to examine possible alternative systems which might achieve the objective and to decide among the alternatives which might achieve the objective and to decide among the alternatives, paying a great deal of attention to formulating criteria which selection is based.⁵⁷

However, systems thinking is not synonymous with systems understanding or hard systems thinking, a technical competency.⁵⁸ Systems understanding is an analytical method of dissecting linear problems into separate components in order to explain the inter-related behavior of the components.⁵⁹ It allows a strategic leader to understand the inter-relationships of his surrounding environment and the roles and expectations of his organization within a broader international arena.⁶⁰ Conversely, systems thinking can be applied as a decision making tool "aimed at finding better ways of tackling the kind of ill-structure problem situations...of human activity systems in which objectives are

multiple, ambiguous and conflicting,” and is especially useful at the strategic level for strategy formulation.⁶¹

In today’s COE, more than ever, strategy formulation requires strategic leaders to scan the environment to ensure their vision is aligned between the organization’s strengths and weaknesses in order to meet their objectives. Thus strategists, in dealing with unknowns and uncertainties of the future, forecast an understanding of the systems of the strategic environment and the various dimensions of interaction in order to form a favorable future.⁶² Forming a favorable future or visioning is arguably the most important strategic leadership task, as articulated by USAWC faculty member, Dr. Stephen Gerras.⁶³ Visioning “seeks to create a shared picture of the future” and as such, a strategic leader must first conduct a comprehensive scan of the environment to determine opportunities and risks.⁶⁴ Furthermore, with limited time and the VUCA environment, strategic leaders have to determine what actors or elements are the most important and relevant to a specific ‘mess’ and focus their attentions and efforts in order to effectively and efficiently make a decision.⁶⁵ The ability to identify opportunities, relationships and possibilities thereby providing a frame of reference is enhanced by using systems thinking and creating a structured map of the strategic world.⁶⁶ However, the concept of systems thinking is not revolutionary; it is evolutionary, as the importance of “relations of organization resulting from a dynamic interaction” can be exemplified in the World War II planning of the Strategic Bombing Campaign against Germany, 1944-1945.

The Anglo-American strategic air coalition had achieved air superiority in 1944 and was faced with the problem of understanding what the Nazi critical vulnerabilities

were that, once attacked, would quickly end the war.⁶⁷ Prior to American involvement in the war and in response to a letter sent 9 July 1941 by President Franklin Roosevelt, the newly formed Air War Plans division created the “blueprint for the American air campaign in the approaching war with Germany.”⁶⁸ Known as Air War Plans Division—Plan 1 (AWPD-1 later AWPD-42), highlighted the primary air objectives for a coalition air campaign.⁶⁹ These plans were used to great effect until late 1943 when the PointBlank plan was approved which changed the entire thrust of the air campaign, successfully neutralizing the Luftwaffe prior to the initiation of Overlord.⁷⁰ Nevertheless, by 1944, the Anglo-American strategic air coalition had differing views of what constituted critical Nazi vulnerabilities. Air Chief Marshal Sir Arthur T. ‘Bomber’ Harris believed continued destruction of infrastructure and industrial output to degrade civilian morale was the best option. Conversely, Lieutenant General Carl A. “Tooey” Spaatz believed it was time for the demise of the Luftwaffe. Lastly, British Air Chief Marshal Sir Arthur Tedder, while not directly serving within the air coalition became the most vocal proponent of attacking German logistical lines of communication, principally, railroad facilities.⁷¹ After much discourse and involvement by British Prime Minister Winston Churchill and Supreme Commander, US General Dwight D. Eisenhower, Tedder’s viewpoint was amalgamated with Professor Solly Zuckerman’s analysis that “attacks on supply lines would not be effective alone without [a] simultaneous ground assault,” and executed prior to D-Day.⁷² The effects of this bombing campaign combined with continued targeting of oil and infrastructure attacks were successful. The targeting of transportation lines of communications were attributed with breaking down “the exchange of vital commodities in the Reich economy, especially coal...and every form

of industrial production was in decline.”⁷³ Although not specifically attributable to systems thinking, it is argued that it was Tedder’s understanding of the environment, fully discussed later in campaign design, that led to the accelerated degradation of the Nazi military capability.⁷⁴ For Tedder had a holistic appreciation of the complex and ambiguous issues concerning the Nazi war effort and the potential second and third order effects.⁷⁵ By understanding the relationship and associations between the transportation lines of communication and industrial production (systems thinking) he was able to formulate a strategy in which forces could react, and defeat the Nazis.⁷⁶ Although not officially recognized at the time, this method of thinking about a problem was general systems theory, which was first formally recognized and published, by Ludwig von Bertalanffy in 1949.⁷⁷ Since then, systems thinking has been incorporated as a foundational conceptual competency into a number of decision making frameworks.

Decision Making Frameworks

The requirement to deal with wicked problems has resulted in the pursuit of decision making frameworks. These frameworks take into account strategic thinking frameworks that facilitate a vision or understanding of what must be achieved. The following are two decision making frameworks that utilize systems thinking as a foundational conceptual competency.

In the 1970 and 1980s, scholars such as Peter Checkland, Professor Emeritus at the University of Lancaster, United Kingdom, aimed at tackling what we call today VUCA problems resulted in Soft Systems Methodology (SSM).⁷⁸ SSM is defined as:

An organized process which articulates a social learning process by structuring discussion of a problem situation, discussion being based on

models of concepts of purposeful activity (built on explicit worldviews) in order to decide on actions to improve to be taken.⁷⁹

The methodology of SSM is a framework that incorporates four steps: Find out about the situation; Develop Root Definition(s); Model Root Definition(s); and Take Decision/Action to Improve, as represented in Figure 5.⁸⁰ As such, it is a system of

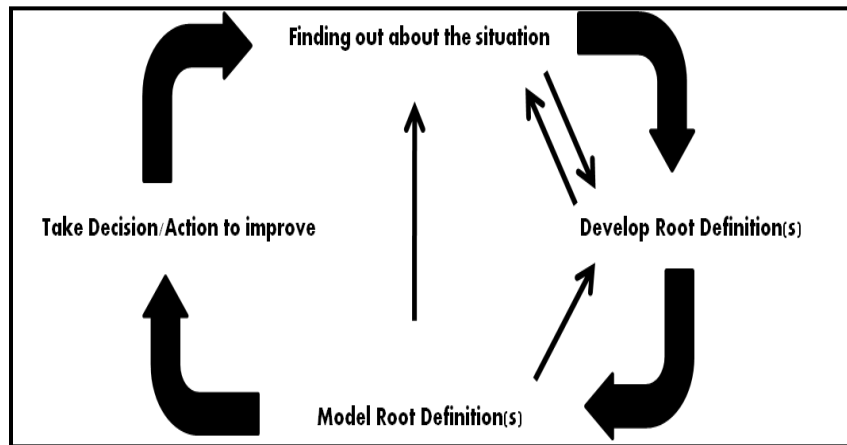


Figure 5: SSM Learning Cycle⁸¹

inquiry that seeks to understand complex situations. Moreover, SSM is particularly “useful at the operational level for campaign design and the strategic level for strategy formulation.”⁸² Systems thinking is a foundational introductory conceptual part of SSM. In order to ‘find out about the situation,’ three analyses are completed: Identify all the relevant stakeholders; examine the important norms, values, beliefs and attitudes of the major actors in the ‘messy situation;’ and, determine the power structures operative in the situation.⁸³ The results of these analyses are “rich pictures” of the perceived world which allows a discourse to occur that is focused on “actions to improve” a wicked problem.⁸⁴ As such, systems thinking is the foundation art within the first step of SSM (find out about the situation) and relevant throughout the learning cycle which is similar to the recently approved US Army method of campaign design.

The US Army has emphasized the importance of problem solving and decision making and has incorporated it into their Field Manuals.⁸⁵ Although the US Army clearly states that “not all problems require lengthy analysis to solve,” they do recognize that a problem’s complexity dictates the amount of analysis. The US Army submits that critical reasoning (thinking) is “an essential leader skill and is a central aspect of decision making.”⁸⁶ Likewise, it is the “key to understanding situations, finding causes, arriving at justifiable conclusions, making good judgments and learning from experience.”⁸⁷ The US Army has also included creative thinking within doctrinal publications. It identifies that some situations may require leaders to “apply imagination, [which is] a departure from the old way of doing things.”⁸⁸ Combined, critical and creative thinking formulate a methodology that develops a systemic understanding of the [contemporary] operating environment that can involve multiples units, services, multinational forces or other instruments of national power.⁸⁹ This methodology is design, which is a method “for applying critical and creative thinking to understand, visualize, and describe complex, ill-structured [wicked] problems and develop approaches to solve them.”⁹⁰ Although not specifically articulated, systems thinking is foundational throughout this methodology.

Design is “command-driven, drawing on experience, judgment, knowledge, and intuition of the commander [strategic leader]...that is based on critical and creative thinking.”⁹¹ As a non process-oriented art it assists commanders’ ability to visualize the environment.⁹² Moreover, “comprehending the operational environment in design requires conceptualizing the environment as a system.”⁹³ The fundamentals of design are: apply critical thinking, understand the operational environment, solve the problem, adapt to dynamic conditions, and achieve the designated goal.⁹⁴ As a continuous,

iterative and cognitive methodology, design constitutes an organizational learning methodology which corresponds to three basic questions that must be answered in order to produce an actionable design concept represented in Figure 6:⁹⁵

- Framing the operational environment (What is the context in which design will be applied?)
- Framing the problem (What problem is the design intended to solve?)
- Considering operational approaches (What broad, general approach will solve the problem?)

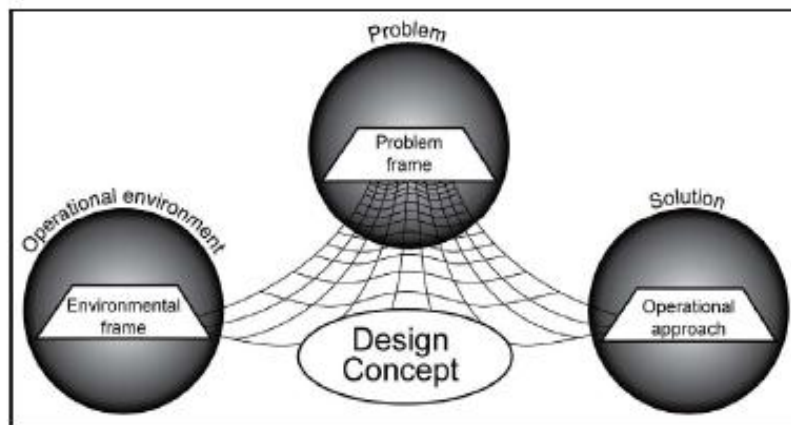


Figure 6: The Design Methodology⁹⁶

Similar to SSM, this author proposes that systems thinking is a foundational conceptual part of design and must be completed while framing the problem within the design methodology in order to allow a strategic leader to achieve a thorough understanding of a wicked problem.

According to the Department of the Army Field Manual (FM) 5-0, *The Operations Process*, framing the operational environment involves selecting, organizing,

interpreting and making sense of a complex reality in order to define the dynamic relationships that give form and context to the situation.⁹⁷ To accomplish this, strategic leaders, in concert with staff, capture a narrative and graphic description of the history, current state, and future goals of relevant actors in the operational environment.⁹⁸ As indicated in the Army Stakeholder mess, relevant actors may include states, governments, international actors, corporations, and regional groupings. They may also include alliances, terrorist networks, criminal organization, cartels, and nongovernmental organizations.⁹⁹ As stated in FM 5-0 “a diagram [system] illustrating relevant actor’s relationship is a valuable tool for understanding and visualizing the operational environment.”¹⁰⁰ Thus, systems thinking is a foundational competency in the concept of design. Developing a thorough understanding of a wicked problem utilizing a diagram of the operational system with a complementary narrative, which FM 5-0 describes as an environmental frame, allows strategic leaders to better understand the context of the COE.

To demonstrate how systems thinking is incorporated as a foundational competency in design, an example of an environmental frame is represented in Figure 7. This environmental frame deals with the wicked problem of whom strategic leaders

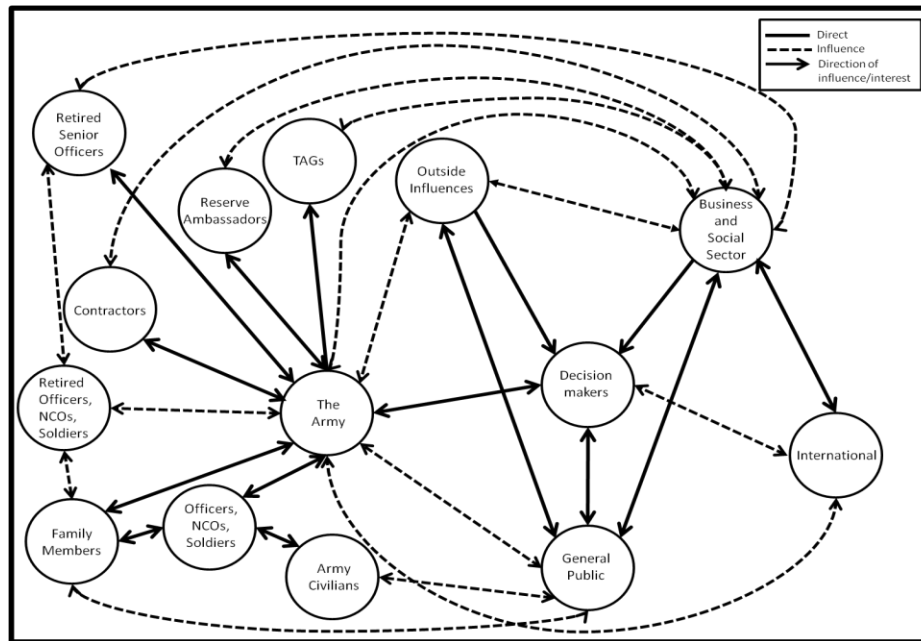


Figure 7: Army Stakeholder System Mess¹⁰¹

externally communicate with in order “to increase ‘buy-in,’ prevent resistance, and help with unexpected reactions throughout the policy process.”¹⁰² It identifies the challenges associated with strategic communications and enables an examination of the relevant stakeholders (actors) that have an interest with, or influence over, the United States Army. It must be identified that each one of the key stakeholders in the system are of themselves mini systems and can be further broken into actors that each have influences on the system.¹⁰³ Nevertheless, by mapping the system it becomes clear that it is ‘Decision makers’ that are the key stakeholders with whom strategic military leaders communicate. To some, this thought would be logical without an environmental frame, however, if the Army is determining the most effective and efficient manner to communicate with the stakeholders, it is evident, by using the system map, that a key stakeholder is the Business and Social sector. It is this stakeholder that should be closely managed and kept satisfied as it has influence and interest within the entire

stakeholder environment. Thus, the system map provides a holistic picture of the stakeholders and enables strategic leaders to conceptually focus their efforts on the most relevant actors. In turn allowing strategic leaders to devise strategies for their organizations, emphasized in the above description of US Army methodology of design.

Conclusion

Today's strategic leaders operate in a COE that is defined as VUCA. The VUCA environment consists of messes that cause friction and fog and affect the ways strategic leaders think and make decisions. Although foundational leader competencies vary little from one leadership level to the next, the necessity for strategic leaders to have integrative conceptual thinking skills is paramount in leading their organizations in the chaotic non-linear environment. This search for a strategy that will provide an understanding of the COE and facilitate understanding of what must be achieved (the ends), is ever more important as the majority of problems today have transformed from tame to wicked problems. A holistic strategic thinking framework has been proposed by a USAWC faculty member, as the means, to assist in this task. Despite explicitly stating that "systems thinking truly distinguishes good strategic thinking" the framework falls short in stating and displaying it as a foundational concept."¹⁰⁴ As proposed by a new model, HSTF, placing systems thinking as a foundational element of strategic thinking allows a leader to better assess the situation. Moreover, complex systems theory (the ways), identifies opportunities, relationships and possibilities, which is enhanced by using systems thinking and creating a structured map systems whose parts can evolve and adapt to a changing environment. Yet, this method of strategy formulation and visioning has evolved over 60 years of thought and is evident in historical examples such as the strategic bombing of Germany by the Allies in 1944. Today, two decision

making frameworks incorporate systems thinking as a foundational concept. First, SSM is a continuous, iterative and cognitive methodology that enables a strategic leader too intuitively and analytically (holistically) ‘connecting the dots.’ Second, design accounts for the complex and chaotic nature of the COE by seeking a holistic strategy to solve wicked problems. It is this analysis of the specific situation that provides a visual map of relevant actors and provides their respective relationships and structures. The result is a holistic understanding of the environment which facilitates quality strategic leadership thinking when devising strategies and thus benefiting the entire organization. Systems thinking is a foundational art in strategic thinking, as represented in Figure 8. It allows strategic leaders to holistically appreciate and interpret the chaos and complexity of a given environment by recognizing the cause and effect relationships of its respective actors. Furthermore, systems thinking should be a foundation in a strategic thinking framework as outlined in the HSTF. For as Albert Einstein once said, "You cannot solve problems with the same level of consciousness that created them."¹⁰⁵

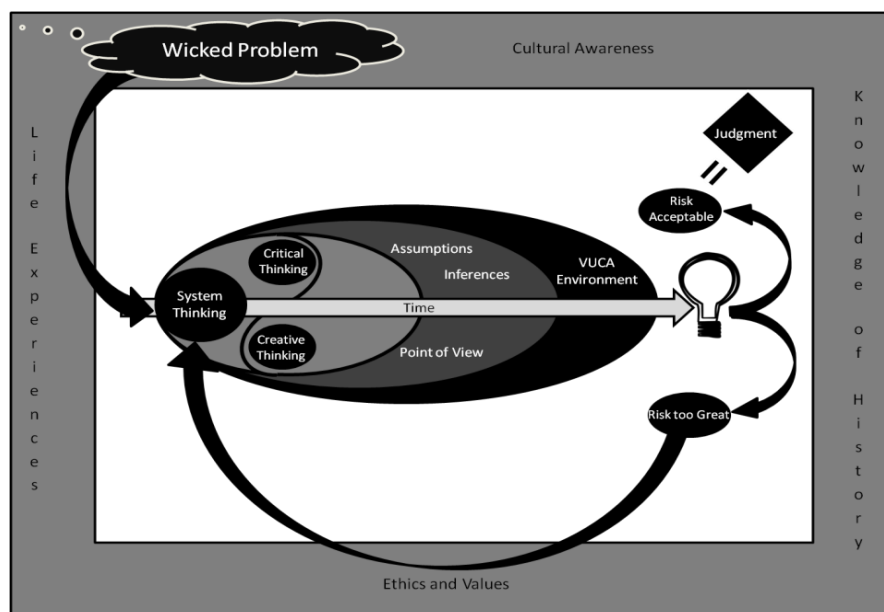


Figure 8: Holistic Strategic Thinking Framework (HSTF)

Endnotes

¹ Peter M. Senge, *The Fifth Discipline: The Art & Science of the Learning Organization* (New York: Currency Doubleday, 1990), 3.

² The concepts of tame and wicked problems were first proposed in 1973 by urban planners Horst W.J. Rittel and Melvin M Webber of the University of California. The concept was furthered by Jeff Conklin in his book *Dialogue Mapping: Building Shared Understanding of Wicked Problems*. Horst W.J. Rittel and Melvin M. Webber, "Dilemmas in a General Theory of Planning," *Policy Sciences* 4 (1973): 160.

³ Harry R. Yarger, "The Strategic Environment," in *Strategic Theory for the 21st Century: The Little Book on Big Strategy* (Carlisle Barracks PA: Strategic Studies Institute, Army War College, 2006), 18.

⁴ Robert E. Horn, "Knowledge Mapping for Complex Social Messes," A presentation to the "Foundations in the Knowledge Economy" at the David and Lucile Packard Foundation, <http://www.stanford.edu/~rhorn/images/SpchPackard/spchKnwldgPACKARD.pdf> (accessed 11 October 2010).

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¹⁰ Bob Johansen, *Leaders Make the Future: Ten New Leadership Skills for an Uncertain World* (San Francisco, CA: Berrett-Koehler Publishers., Inc. 2009), xiii-xvii.

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¹² Johansen, *Leaders Make the Future*, 30-31.

¹³ Montgomery C. Meigs, "Operational Art in the New Century," *Parameters* 31, no.1 (Spring, 2001): 12.

¹⁴ Johansen, *Leaders Make the Future*, 33.

¹⁵ Yarger, "The Strategic Environment," 18.

¹⁶ Ibid.

¹⁷ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984), 149.

¹⁸ Dr. Bill Bentley, and Scott M. Davy Peter, "Military Decision-Making and Soft Systems Methodology", in *Decision-Making: International Perspectives*, ed. Dr. Peter Greener and Lieutenant-Colonel Jeff Stouffer (Canadian Defence Academy Press, 2009), 20.

¹⁹ Yarger, "The Strategic Environment," 18.

²⁰ Jeff Conklin, "Wicked Problems and Social Complexity," in *Dialogue Mapping: Building Shared Understanding of Wicked Problems* (CogNexus Institute, 2006), 9.hansen

²¹ Rittel and Webber, "General Theory of Planning," 162.

²² Horn and Weber, "Resolving Wicked Problems."

²³ Conklin, "Wicked Problems," 14.

²⁴ Ibid.

²⁵ Greener and Stouffer, ed., *Decision-Making: International Perspectives*, 22.

²⁶ Stephen J. Gerras, ed., "Strategic Leadership Competencies," in *Strategic Leadership Primer 3rd ed*, (Carlisle Barracks PA: Department of Command, Leadership and Management, US Army War College, 2010), 28.

²⁷ Ibid.

²⁸ The definition used in this paper is Peter Senge. *The Journal of Business Strategy* (September/October 1999) named Peter M. Senge one of the 24 people who has had the greatest influence on business strategy over the last 100 years. *The Financial Times* (2000) named him one of the world's "top management gurus." *Business Week* (October 2001) rated Senge one of the Top Ten Management Gurus," http://mitsloan.mit.edu/faculty/detail.php?in_spseqno=128&co_list=F (accessed 4 December 2010). However, there is not a consensus on the definition of a learning organization. For alternative definitions refer to Pedler, M., Burgoyne, J. and Boydell, T, *The Learning Company. A strategy for sustainable development* (London 1991, 1996), 1, and McGraw-Hill Watkins, K. and Marsick, V, "Building the learning organization: a new role for human resource developers," *Studies in Continuing Education* 14(2) (1992): 118.

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⁴⁹ Stephen J. Gerras, "Thinking Critically about Critical Thinking: A Fundamental Guide for Strategic Leaders," (Carlisle Barracks PA: Department of Command, Leadership and Management, US Army War College, 2006), 7.

⁵⁰ Department of Defense, Joint Publication 5-0, *Joint Operation Planning*, Revision Final Coordination Draft 10 Sep 2010, 3-43.

⁵¹ U.S. Joint Chiefs of Staff, *Joint Operation Planning*, Joint Publication 5-0(Washington, DC: Revision Final Coordination Draft 10 Sep 2010), 3-5.

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⁵³ Bertalanffy Center for the Study of Systems Science, "Origins of General Systems Theory," http://www.bertalanffy.org/c_26.html (accessed 15 October 2010).

⁵⁴ Bertalanffy Center for the Study of Systems Science, "Origins of General Systems Theory," http://www.bertalanffy.org/c_26.html (accessed 19 December 2010).

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⁵⁸ Hard systems thinking was a methodology of thinking in the 1950s and 1960s that defined an objective or need and formed the basis for the Operational Planning Process and its counterparts (MDMP) developed in Western militaries. Greener and Stouffer, ed., *Decision-Making: International Perspectives*, 26.

⁵⁹ Greener and Stouffer, ed., *Decision-Making: International Perspectives*, 22.

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⁷⁴ U.S. Joint Chiefs of Staff, *Design in Military Operations: A Primer for Joint Warfighters*, Joint Doctrine Series Pamphlet 10 (Washington, DC: U.S. Joint Force Command, 20 September 2010), A-6.

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⁷⁶ Greener and Stouffer, ed., *Decision-Making: International Perspectives*, 26.

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⁸⁰ Greener and Stouffer, ed., *Decision-Making: International Perspectives*, 26-27.

⁸¹ This model was reproduced by author. Greener and Stouffer, ed., *Decision-Making: International Perspectives*, 29.

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⁸³ Ibid., 29-30.

⁸⁴ Ibid., 27-30.

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⁹⁶ Ibid., 3-7.

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¹⁰³ A detailed list of members within each stakeholder group can be found in Stephen J Gerras, "Communication with External Audiences- A Stakeholder Management Approach," (Carlisle Barracks, PA: US Army War College, 2010), 2.

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